

Problem Set 1-3



Reading Analysis

From now on most problem sets will begin with an assignment that requires you to spend ten minutes or so reading the section and answering some questions to see how well you understand what you have read. This will help develop your ability to read a textbook, a very important skill to have in college. It should also make working the problems in the problem set easier.

From what you have read in this section, what do you consider to be the main idea? What is the major difference on the image graph between a translation and a dilation, and what operation causes each transformation? How can you tell whether a translation or a dilation will be in the x -direction or the y -direction?



Quick Review

From now on there will be ten short problems at the beginning of most problem sets. Some of the problems are intended for review of skills from previous sections or chapters. Others are intended to test your general knowledge. Speed is the key here, not detailed work. Try to do all ten problems in less than five minutes.

- Q1. $y = 3x^2 + 5x - 7$ is a particular example of a function.
- Q2. Write the general equation of a power function.
- Q3. Write the general equation of an exponential function.
- Q4. Calculate the product: $(x - 7)(x + 8)$
- Q5. Expand: $(3x - 5)^2$
- Q6. Sketch the graph of a relation that is not a function.
- Q7. Sketch the graph of $y = \frac{2}{3}x + 4$.
- Q8. Sketch an isosceles triangle.
- Q9. Find 30% of 3000.

Q10. Which one of these is not the equation of a function?

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|-------------------|----------------------|
| A. $y = 3x + 5$ | B. $f(x) = 3 - x^2$ |
| C. $g(x) = x $ | D. $y = \pm\sqrt{x}$ |
| E. $y = 5x^{2/3}$ | |

For Problems 1–6, let $f(x) = \sqrt{9 - x^2}$.

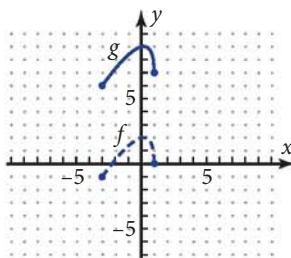
- a. Write the equation for $g(x)$ in terms of x .
- b. Plot the graphs of f and g on the same screen. Use a window with integers from about -10 to 10 as grid points. Use the same scale on both axes. Sketch the result.
- c. Describe how $f(x)$ was transformed to get $g(x)$, including whether the transformation was an inside or an outside transformation.

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|--|--|
| 1. $g(x) = 2f(x)$ | 2. $g(x) = -3 + f(x)$ |
| 3. $g(x) = f(x - 4)$ | 4. $g(x) = f\left(\frac{1}{3}x\right)$ |
| 5. $g(x) = 1 + f\left(\frac{1}{2}x\right)$ | 6. $g(x) = \frac{1}{2}f(x + 3)$ |

For Problems 7–12,

- a. Describe how the pre-image function f (dashed) was transformed to get the graph of the image function g (solid).
- b. Write an equation for $g(x)$ in terms of function f .

7.



8.

